

2 - PROPOSED ACTION AND ALTERNATIVES

This chapter describes and compares the alternatives considered for the Garden Mountain Fuel Management Project (GMFMP) area, which encompasses 3,130 acres of BLM land. It includes a description of each alternative considered and presents the alternatives in comparative form, defining the differences between each alternative and providing a basis for choice as required by the CEQ regulations (40 CFR §1502.14d).

Fuels modification recommendations were developed by analysis of timber stand exam data and non-timber vegetative surveys completed in summer/fall 2003, and through internal discussions. The alternative development process is described first, including alternatives that were considered but not carried forward for analysis. Full descriptions of the No Action alternative and the action alternatives are included along with maps of the action alternatives. The last section in this chapter provides a brief summary of the environmental consequences of the alternatives. A more detailed analysis of the effects on the environment follows in Chapter 3: *Affected Environment and Environmental Consequences*.

2.1 Alternative Development Process

During the alternative development process, alternatives were considered that if implemented would: 1) effectively reduce the potential for uncharacteristic fire in and around the communities of Crouch and Garden Valley and the surrounding areas; 2) provide for defensible space, escape routes and safety zones for fire fighting efforts and residents; 3) restore forest health and the historic fire regime; and 4) maintain the aesthetics of the viewshed. Alternatives were developed in coordination with forestry staff, resource and fire specialists, and the interested public (See Chapter 1: *Scoping and Identification of Resource Concerns* and Chapter 4: *Public Meetings* for a description.). A comprehensive field survey (described below) was completed in order to develop the most appropriate treatment alternative for the area.

Factors related to fire behavior (such as fuels, vegetation, topography, and prevailing winds), watershed boundaries, private land, proximity to towns, and visual resources were all considered when defining the treatment area. A full array of fuel treatments and combinations of treatments including various logging and utilization methods; commercial and public firewood cutting; chipping treatments; thinning; piling and understory burning; and construction of fuels breaks was considered to develop the Proposed Action alternative.

To accurately inventory the existing vegetation, forest health, and fuels within the project area, multiple data sources were examined. First, all of the forested and non-forested areas within the project area were delineated into polygons (stands) through a combination of 1988, 1989, and 2000 aerial photography interpretation. Aerial photography interpretation defined general vegetation patterns and forest health and helped define areas for further field investigation. An evenly spaced grid (i.e., one point every 20 acres for forested areas and one point every 40 acres for non-forested areas) was developed for the project area.

In the summer and fall of 2003 a field crew conducted quantitative stand exams (for forested stands) at every point, and completed qualitative “walkthrough” surveys that described the stands in general terms. Fuels data was collected at each point including species, standing and downed dead woody material, height to first live limb, tree health, age, diameter, and other data. All of the field data were entered into a Forest Vegetation Information System (FORVIS) database (USDI BLM 2001b) and are available in the project file at the FRFO. Information about FORVIS is available at <http://www.blm.gov/nstc/resourcenotes/rn48.html>.

2.2 Alternatives Considered but Not Carried Forward

In addition to the alternatives described in detail, three other alternatives were also considered during project analysis. These alternatives are described below along with the rationale for why they were dropped from further consideration.

1. **New Roads.** This alternative considered building new roads to access additional forested stands within the project area. This alternative was dropped from further consideration because road construction and renovation will be considered under a separate BLM environmental analysis.
2. **No Prescribed Burning.** This alternative considered eliminating prescribed burning from all of the management units (MUs) within the Proposed Action alternative and in the Shaded Fuelbreak alternative. Fire is an essential process for restoring forest health and therefore this alternative was dropped from further consideration because it would not fully meet the project objectives.
3. **Increased Treatment Areas.** This alternative considered fuels treatment on a larger portion of the project area. This alternative was not explored further because of the steep slopes and unstable granitic soils present in areas that are not currently proposed for treatment under the Proposed Action. In addition, some areas were judged to be a low priority based on low fuel loading.

2.3 Description of Alternatives

2.3.1 Alternative 1 - No Action

The No Action alternative, which encompasses the entire GMFMP area (3,130 acres), represents the existing condition against which the other alternatives are compared and is considered throughout the analysis process. Under the No Action alternative existing management direction for Garden Mountain would continue based on the Cascade RMP (USDI BLM 1987). Current management of forestland within the Crouch/Garden Valley area emphasizes maintaining healthy stands and protecting water quality, wildlife habitat, and other uses. Under the No Action alternative, fuels management treatments for the reduction of fuels and improvement of forest health would not occur. Fire suppression would occur for any wildfires burning in the area.

Summary of Impacts - Under the No Action alternative the potential for a high-intensity, stand replacing crown fire in the GMFMP area would remain high and would continue to increase over time due to accumulating fuel loads. In the event of a high-intensity wildland

fire several indirect effects would result. Wildlife habitat could be destroyed for as long as 80 to 100 years, and mid to late seral dependent wildlife could lose habitat for 80 to 200 years. Habitat and mechanisms for noxious weeds and invasive species introduction and proliferation would be created. A high-intensity fire would affect soil productivity and increase soil erosion by reducing vegetative ground cover. Water quality would be impacted from increased sedimentation, which would in turn impair beneficial uses and affect proposed bull trout critical habitat and IDEQ 303(d) water quality limited stream segments. Air quality would be impacted for the duration of the fire and until the smoke could disperse from the area. Visual resources would be affected until revegetation occurred. *Ceanothus* (*Ceanothus velutinus*), a native evergreen shrub that is present in the non-forested areas of the project area, would likely increase within burned areas.

Management of the area calls for full suppression and, if a fire were to occur, the Forest Service, through a cooperative agreement, would work to suppress the fire. Impacts could occur to the area through suppression efforts including the use of staging areas, creation of fire lines, and other activities. If a large fire occurs in the Garden Mountain area, there is also the potential that the fire would spread to private land and endanger property and lives.

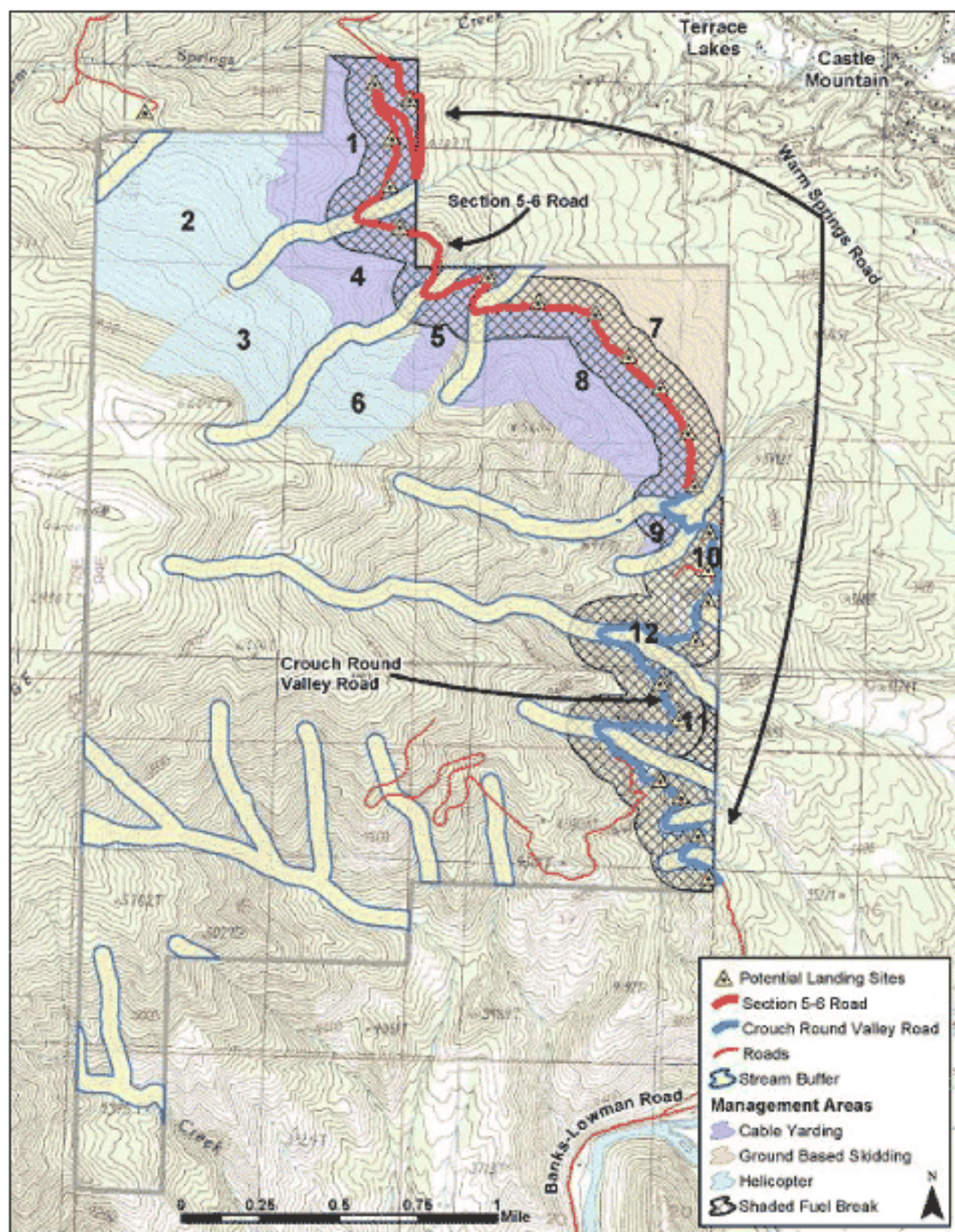
2.3.2 Alternative 2 - Proposed Action (Forest Health)

The Proposed Action is designed to meet forest health objectives and reduce the threat of catastrophic wildland fire from spreading to adjacent private land and vice versa. This alternative identifies specific actions and project locations that would meet the purpose and need for this project. Twelve MUs and treatment prescriptions have been identified in the Proposed Action (Figure 3); these are discussed in detail in Appendix A. The boundaries of individual treatments overlap in some instances so more than one treatment may be applied to a single area; for instance, MU 12 is a 500-foot shaded fuelbreak, parts of which fall into MUs 1, 4, 5, and 7-11.

All treatments and units would use **prescribed fire** to reduce fuel loads and fire hazards and restore fire to the ecosystem after thinning activities occur. Prescribed fire is the use of management-ignited fire to meet specific resource goals and objectives under pre-defined fuel and weather conditions. These conditions are referred to as the "prescription." Several factors are described in a prescription, including fuel moisture, wind speed and direction, relative humidity, and temperature. Fire behavior is predicted using models that take these factors into account. Fire managers combine this information with professional experience when deciding if the right conditions exist for a safe and effective controlled burn to occur. Other factors that are taken into account when deciding whether or not a prescribed fire would occur, or continue, include smoke dispersal, resource availability (e.g., crews and equipment), and fire risk.

In all MUs, hazardous fuels would be reduced and fire would be restored to the ecosystem with controlled understory burns, which may include jackpot burning. Jackpot burning involves the burning of areas with a concentration of fuels, (e.g., slash piles). Prescribed fire would be ignited in patches across the treatment area, focused on patches of fuel concentrations with other patches left unburned. Prescribed burning would take place when moisture levels are such that prescribed burns could be controlled, and would be limited to periods when atmospheric conditions would allow for dispersion of smoke.

Figure 2. Proposed Action



Incorporated into the project design criteria and Best Management Practices (BMPs) are: 1) Cascade RMP standards and guidelines, 2) SSS population and habitat information, including ESA listed threatened, endangered, proposed, and candidate species and BLM sensitive species, 3) INFISH riparian habitat conservation areas (RHCAs) (USDA 1995), 4) all National Fire Plan ESA consultation process project design criteria, 5) all air quality, smoke management, and water quality regulatory requirements, 6) pre-and post-project weed treatments, and 7) post-project soil augmentation and revegetation. These are listed in Appendix A along with the details associated with the Proposed Action. Treatment areas are broken out into two treatment types: improvement harvest and fuels treatment harvest. Details about these are summarized below.

The goal of an **improvement harvest** is to increase overall forest health by removing trees that are declining in health/vigor from insects or diseases, deformed trees, or late successional trees. Grand fir (*Abies grandis*) and subalpine fir (*Abies lasiocarpa*) are considered late successional because they tend to regenerate under the shaded canopy of pioneer species such as ponderosa pine (*Pinus ponderosa*). Late successional (or climax) species are generally not as fire resistant as early seral or pioneer species. Once established, late successional species will crowd out the pioneer species, resulting in a stand populated by species that are not fire resistant.

Improvement harvests are proposed for MUs 1-10. This treatment would involve the removal of ladder fuels in the form of climax species (i.e. grand fir and subalpine fir) in favor of retaining seral species (i.e. Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine). This would create small openings in the canopy, maintain a less-dense stand, which would be less likely to experience crown fire, and remove dead, infected or diseased trees. Variation in spacing would be incorporated throughout units for visual diversity. Trees targeted for harvest would be 12 to 28 inches diameter at breast height (DBH). Treatments would remove infestation, release suppressed species, and retain large mature trees for wildlife, seed stock, and visual aesthetics. Buffer zones would be created on either side of all perennial and intermittent streams in the project area. No harvest would occur in these buffer zones in order to protect the streams. INFISH regulations on buffer widths would be followed and buffer widths would be approved by the FRFO fisheries biologist. Design criteria provide sufficient amounts of standing and down woody material to: 1) maintain soil moisture, 2) provide “nurseries” for regeneration, 3) maintain wildlife habitat, and 4) maintain biodiversity.

Specific treatments for improvement harvests – On the eastern side of the Warm Springs Road, 157 acres with slopes less than or equal to 35 percent would be harvested using ground-based systems only (MUs 7 and 10). This would be done through manual felling (chainsaw), and skidding using rubber tired, and crawler tracked tractor skidding, jammer based logging system, or highlead yarding system. Jammer logging is an uphill yarding system with a reach of 100 to 300 feet. The jammer can also serve as a log loader after yarding the logs (Figure 4).

A highlead logging system is the most widely used yarding system in the U.S. and Canada. Highlead equipment comes in a variety of sizes. The basic system consists of a two-drum

yarder and a spar or tower (Figure 5). The term "highlead" refers to the location of the mainline block elevated above the ground by the spar. The high block provides the vertical lift which allows the logs to override obstacles. Logs are yarded to the landing by the mainline and the haulback pulls the butt rigging back to the timber.

Figure 3. Jammer Based Logging System (Central Oregon Community College 2004)

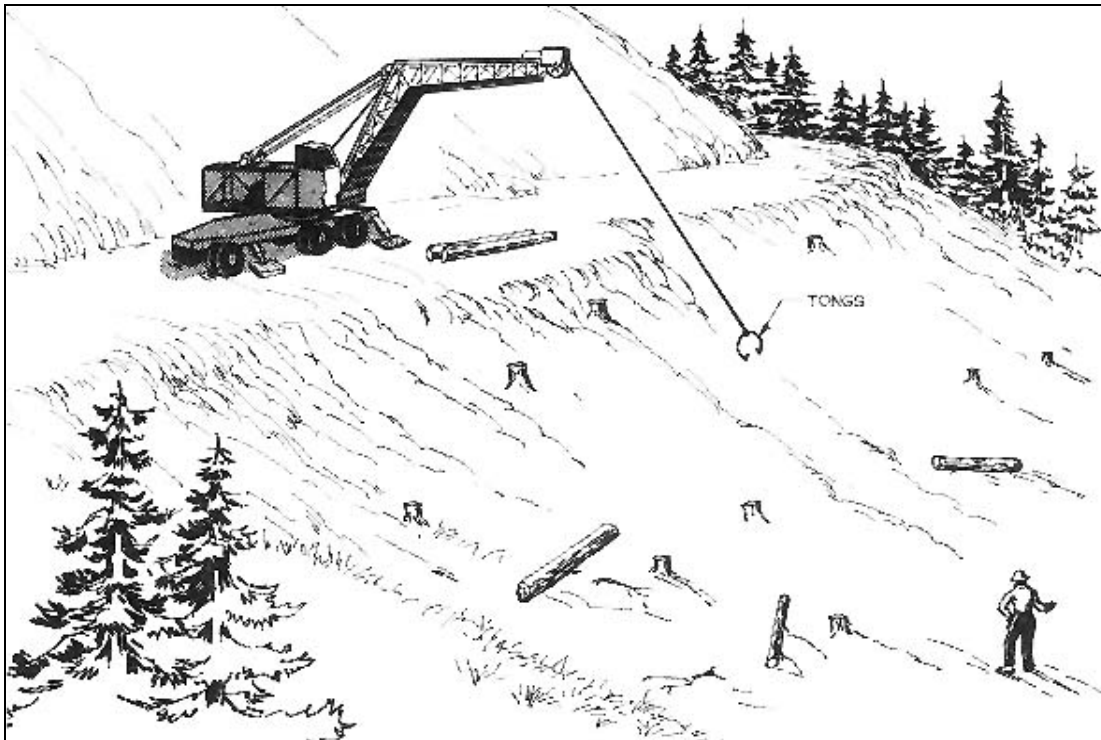
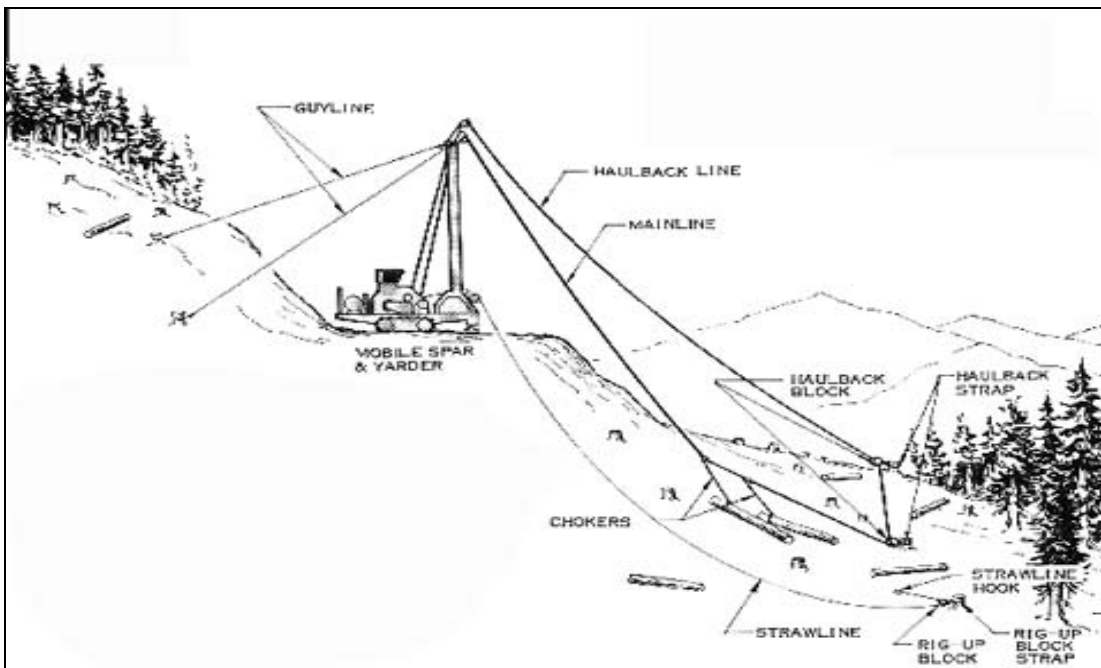


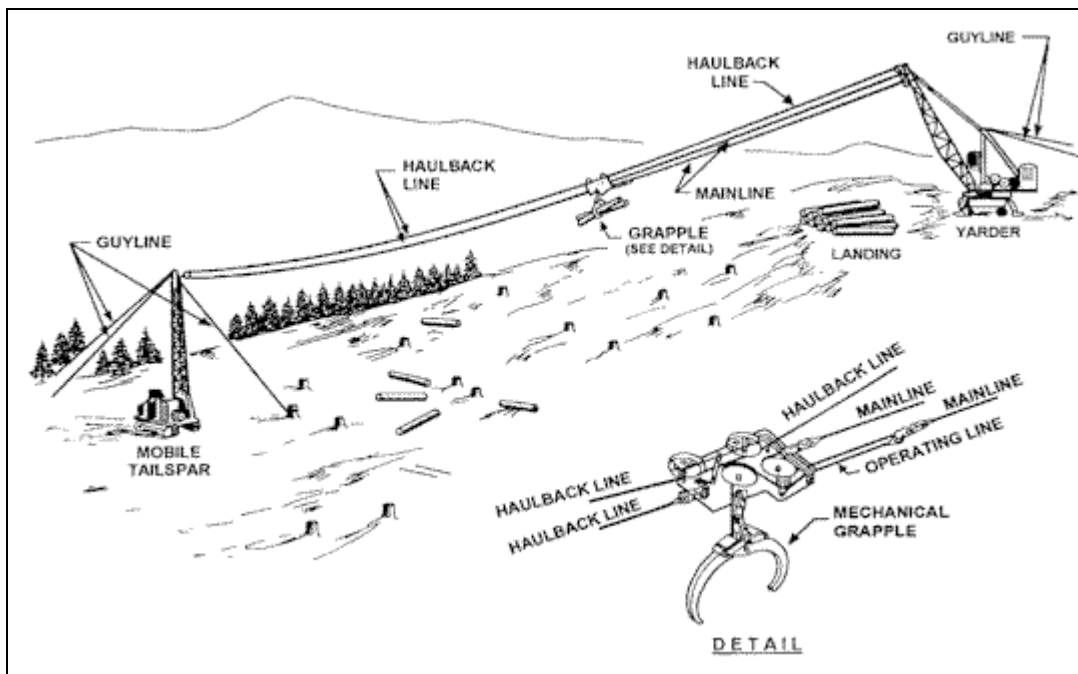
Figure 4. Highlead Logging System (Central Oregon Community College 2004)



The running skyline cable yarding units (MUs 1, 4, 5, 8, and 9) total 364 acres along the western edge of Warm Springs Road, and have slopes ranging from 35 to 60 percent. The cable yarding units would be harvested by manual felling (chainsaw) and would utilize a full suspension running skyline system to yard the logs to a landing site (Figure 6). The running skyline can perform partial cuts with its lateral yarding capability, and carry heavy loads with smaller cables, since three lines would be used to carry the load. This configuration can log uphill and downhill.

Units on steep slopes (greater than 60 percent) with highly erodible, granitic soils and no road access would be helicopter logged (MUs 2, 3, and 6) (Figure 3). Harvest of 337 acres in these units would be accomplished by helicopter logging because it eliminates the need for new roads, spurs, cable corridors or skid trails and protects sensitive terrain.

Figure 5. Full Suspension Running Skyline Logging System
(Central Oregon Community College 2004)



Slash that is less than four inches in diameter would be manually lopped and scattered. On slopes less than or equal to 35 percent, slash would be tractor piled. On slopes greater than 35 percent, the slash would be hand piled. Lopping and scattering the slash would reduce fuelbed depth, protect soil, and help re-establish vegetation on landings and skid trails by providing seedling protection. Appendix A contains specific design criteria for lop and scatter. Lopping and scattering would also retain coarse woody debris cover to protect the soil from rainfall impact and harvest equipment making passes through the stand, reduce surface temperatures creating a favorable environment for seedling regeneration, and provide soil organic matter through decomposition. Whole-tree yarding or yarding with tops attached may be used in some areas to reduce slash and facilitate subsequent prescribed fire treatments. Skid trails and landings would be required for these harvest treatments to remove timber from the project area. Skid trails would be designed and located to minimize soil disturbance. The size and number of landings would be the minimum necessary to

accommodate safe, economical operation. Potential landing sites are shown in Figure 3. The exact location of the landings may vary and would be determined in the timber sale contract.

The goal of a **fuels treatment harvest** is to provide a fuelbreak. These would be in the form of shaded fuelbreaks that would create defensible zones strategically located to break up the continuity of fuels and reduce the potential for high intensity crown fires that could spread to private land within the WUI. Treatments would include tree felling, brush cutting, pruning, tractor or hand piling of slash, brush, and debris, and covering and burning slash piles. The result would be an open, park-like stand and an environment that would allow ground fuels to burn in a controllable manner. Buffer zones would be created on either side of all perennial and intermittent streams in the project area. No harvest would occur in these buffer zones in order to protect the streams. INFISH regulations on buffer widths would be followed and buffer widths would be approved by the FRFO fisheries biologist. Prescriptions would require the retention of two hard snags per acre greater than 15 inch DBH, and one hard snag greater than 20 inch DBH, and a minimum of 40 feet in height. Two MUs (11 and 12) would have only shaded fuelbreak treatments (Figure 3). Sections of MUs 1, 4, 5, and 7-10 would have shaded fuelbreak treatments in addition to other prescriptions (Figure 3).

Specific treatments for fuels treatment harvest – A 459 acre shaded fuelbreak unit is proposed along the entire length and on either side of the Warm Springs Road within the GMFMP area (MU 12) (Figure 3). This shaded fuelbreak would be 300 to 500 feet wide and is located within MUs 1, 4, 5, and 7-11. MU 12 would run along the eastern boundary of the project area and border state and private lands. In addition, it would buffer the Warm Springs Road, which experiences large volumes of recreational use. As a result, this is a high risk zone for human caused fires that could spread from BLM lands onto state and private lands, and into nearby WUI areas.

A fuel reduction treatment is also proposed for a 30-acre unit in a draw that slopes onto private lands (MU 11) (Figure 3). This would increase the shaded fuelbreak protection width to 2,592 feet in this location because the draw contains heavy brush, ponderosa pine saplings and high volumes of downed hazardous fuels. The adjacent private land is comprised of stands of 30 to 60 foot tall ponderosa pine that is infested with bark beetle and is experiencing some mortality. Treatment for this unit would be applied to the entire unit, not just within the 300 to 500-foot buffer.

The terrain along the road is highly variable and slopes range from approximately 35 to 70 percent. Mechanical treatments (tractor piling) would be used on slopes less than 35 percent (Figure 3). Hand treatments (hand cutting of brush, brush piling and understory thinning) would be used on slopes greater than or equal to 35 percent. In order to create the shaded fuelbreaks in these areas, the understory would be thinned, with all insect- or disease-infected trees targeted for priority removal. Seedlings, saplings, and other “ladder fuels” would also be targeted, unless their density does not contribute to a potential crown fire hazard. Seral species (ponderosa pine and Douglas-fir) would be retained whenever practical.

Brush and slash would be removed and tractor piled in areas with less than or equal to 35 percent slopes or hand piled in areas with greater than 35 percent slopes where thinning and

removal of material is not sufficient to allow follow-up burning. Some residual Douglas-fir and grand fir would be pruned to remove branches within five feet from the ground.

Maintenance of the shaded fuelbreak could include all of the same elements included in the initial treatment. Maintenance treatments would be based on site evaluations occurring every three years. An implementation schedule is included in Appendix B.

Summary of Impacts - The Proposed Action alternative has the potential to affect soil productivity and soil erosion could increase as a result of loss of ground cover. Water quality would potentially be impacted from increased sedimentation, which would in turn impair beneficial uses and affect proposed bull trout critical habitat and IDEQ 303(d) water quality limited stream segments. Air quality and visibility would be temporarily affected during, and for a period of time after, burning. Visual resources would be affected in the short-term while thinning is occurring and for a period of time after treatment until revegetation occurs.

Ground disturbance such as logging, burning, and vehicle traffic may create areas of disturbed soil and create suitable conditions for noxious weed and invasive species introduction and proliferation. Design criteria were developed to ease some of the potential impacts the action alternatives may cause and would be integral to project implementation (Appendix A). Design features incorporated into the alternatives were designed to achieve water quality standards and ensure compliance with the Federal Clean Water Act of 1972, as amended (1977 and 1987). Provisions would be applied to minimize potential for erosion and sedimentation on disturbed areas. RHCAs would be designated to protect fisheries habitat, riparian habitat, and water quality within the project area as directed by INFISH (USDA Forest Service 1995). Traffic would increase due to the presence of logging trucks and would lead to an increase in fugitive dust due to use of unpaved roads. Noise would increase in the area from logging operations, and particularly at times that helicopter logging occurs.

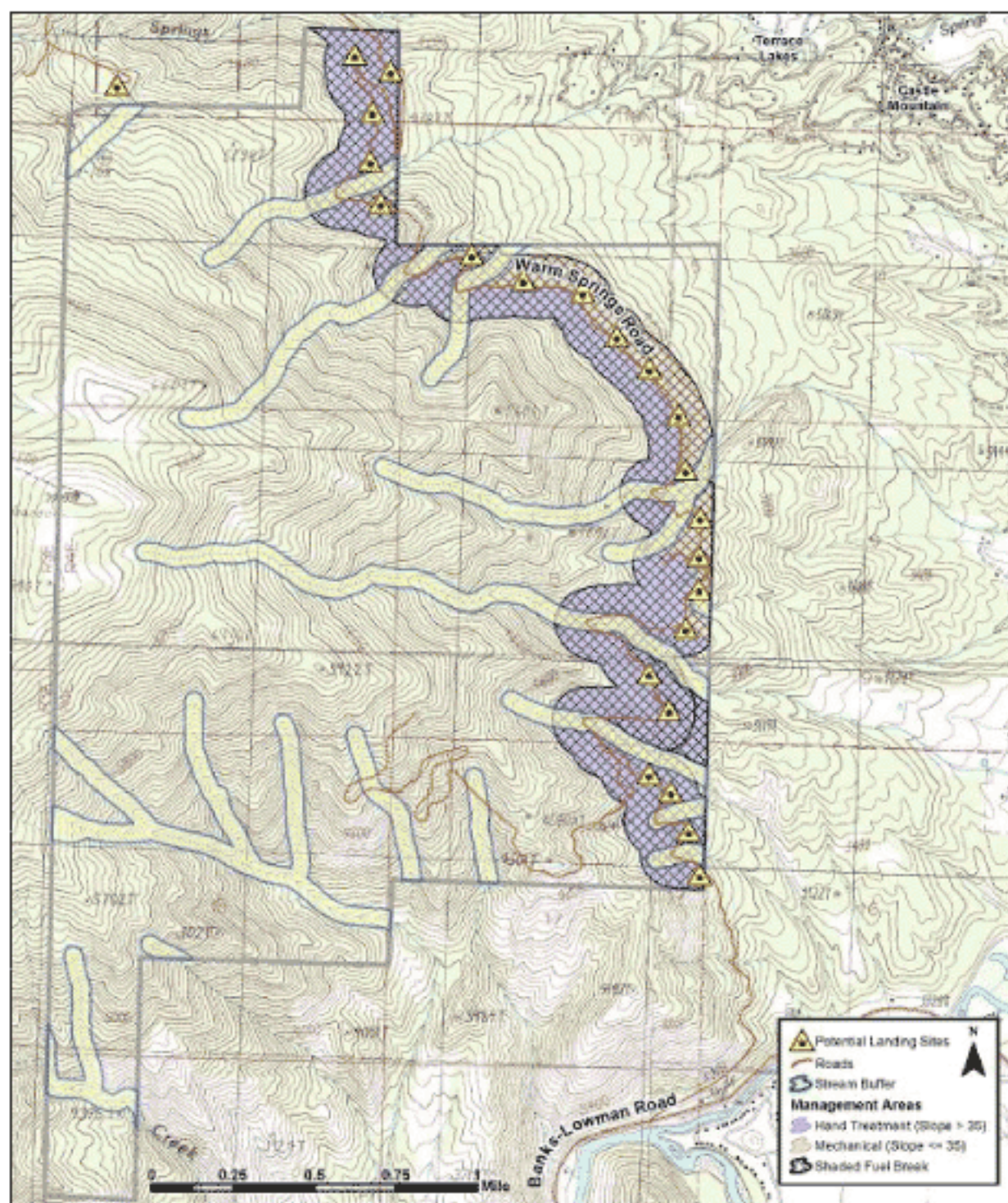
2.3.3 Alternative 3 - (Shaded Fuelbreak)

The Shaded Fuelbreak alternative would implement only the shaded fuelbreak treatments (MUs 1, 4, 5, and 7-12) discussed in the Proposed Action, and would exclude all the forest health treatments described in the Proposed Action (Figure 7). The 459 acre shaded fuelbreak unit would be the same as the Proposed Action - located along the entire length and on either side of the Warm Springs Road in the GMFMP (Figure 7). A combination of mechanical treatment (108 acres) and hand treatment (351 acres) would be used to remove hazardous fuels under this alternative (Figure 7).

The area encompassed by this alternative is a high-risk zone due to the high volume of recreational use and proximity to private and State land. The shaded fuelbreak would create a 300 to 500 - foot wide defensible zone strategically located to breakup the continuity of fuels and reduce the potential for high-intensity crown fires that could spread to adjacent lands and into WUI areas (Figure 7).

Summary of Impacts - Effects to soils and other resources would be less than under the Proposed Action because of the smaller treatment area. Less prescribed burning would occur under this alternative because of the smaller total treatment area.

Figure 6. Shaded Fuelbreak Alternative



2.4 Alternative Comparison

This section summarizes the analytical results that serve to highlight the differences among the alternatives (Table 1). Information is focused on activities and effects where different levels of direct effects or outputs can be distinguished quantitatively or qualitatively among alternatives. This summary assumes that for any action alternative, mitigations, BMPs, and project design features specified herein would be implemented, thus reducing the direct effect on the resource. Therefore, in many cases the direct effect of implementing an action alternative is negligible, not of great extent, and/or of temporary duration. Furthermore, the No Action alternative assumes that existing conditions and management direction continues, and that a large fire does not occur. If such a fire were to occur, there would be large, negative consequences of the No Action alternative on all the environmental resources listed below. Chapter 3 describes in detail the environmental consequences of the alternatives and presents further comparison of the effects of the alternatives. A cost analysis is included as Appendix C.

Table 1. Comparison of Alternatives

	Alternative 1¹ <i>No Action</i>	Alternative 2 <i>Proposed Action</i>	Alternative 3 <i>Shaded Fuelbreak</i>
Tractor Yarding Acres	0	157	0
Cable Yarding Acres	0	364	0
Helicopter Yarding Acres	0	337	0
Shaded Fuelbreak Hand Treatment	0	351	351
Shaded Fuelbreak Mechanical Treatment	0	108	108
Total Treatment Acres	0	1,317	459
Approximate Volume (MBF) ² (For MUs 1-10)	0	10/acre	0 ²
Prescribed Burn Acres	0	1,317	459
Uncharacteristic Fire Potential ³	High	Low	Low
Fuel Levels ³	None	Reduced in Key Locations	Reduced in Key Locations
Forest Health Treatment Only ³	No Improvement	888 Acres Improved	No Improvement
Acres of High to Highly Erodible Soil in Management Units	0	1,317	459
Impacts to Soils	0	Moderate	Low
Impacts to Air Quality	None	Localized/Temporary	Localized/Temporary
Impacts to Cultural Resources	None	Low	Low
Impacts to Visual Resources	None	Short-term/ Localized	Short-term/ Localized
Wildland Fire Risk	High	Low	Low-Moderate
Impacts to Water Quality	None	Low	Low
Impacts to Water Yield	None	Low	Low
Fisheries and Aquatic Habitat	None	Low	Low
IDEQ 303(d) Listed Stream Segments	None	Low	Low
Impacts to Special Status Terrestrial Species	None	None	None
Impacts to Special Status Plants	None	Low	Low
Ungulates	None	Improved Forage	Slightly Improved Forage
Forest Habitat Birds of Prey	None	Improved Forage	Slightly Improved Forage
Small Mammals	None	Decreased Habitat	Slightly Decreased Habitat
Potential for Noxious Weed and Invasive Species Proliferation	No Change	Low	Low

¹Because the potential for an uncharacteristic stand replacing crown fire is highest with the No Action alternative, it has the potential to have the greatest negative impact on existing resources. This comparison of alternatives table does not indicate degree of impact for an uncharacteristic fire, but only for continued management direction.

²Volumes of thousand board feet (MBF) are rough estimates based on stand exam data collected as part of this project. Actual volumes will be determined during harvest and timber sale administration, if an action alternative is selected. These volume estimates are only provided for comparative purposes to illustrate the potential difference between the alternatives. The estimate of zero for the Shaded Fuelbreak alternative is because of the uncertainty of the market for the size of trees that would be removed.

³Although forest health is improved and fuels reduced in both alternatives 2 and 3, because alternative 2 treats a larger area, by default it has a greater beneficial effect.